

## **3.0 AFFECTED ENVIRONMENT**

### **3.1 Introduction**

This section describes the current condition of resources in the study area that may be affected by the Proposed Action. Resources and related topics presented include geology and soils, hydrology and hydraulics, floodplains, water resources and net depletions, erosion control and water quality, air quality and noise, vegetation communities, noxious weeds, fish and wildlife, threatened, endangered and special status species, cultural resources, Indian trust assets, socioeconomic considerations, visual and aesthetic resources, land use and recreational resources, and environmental justice.

The Albuquerque Reach of the Rio Grande extends from the Angostura Diversion Dam to the Isleta Diversion Dam (Figure 1-1). This area has been identified by Reclamation and the ISC, as well as the Collaborative Program, as being a reach of the Rio Grande where habitat/ecosystem restoration projects would be highly beneficial to all life stages of the RGSM.

### **3.2 Description of Relevant Affected Resources**

#### **3.2.1 Geology and Soils**

The MRG lies in an asymmetric, elongated valley along the Rio Grande Rift (Chapin 1988; Hawley 1978). The Rio Grande Rift valley is dominated by connected alluvial-filled sub-basins defined by normal faulted mountain ranges. The land flanking the Rio Grande Basin on the east is predominantly mountainous, with merging colluvial-alluvial fans and stream terraces sloping down and westward toward the Rio Grande. The geologic surface west of the river is ancestral Rio Grande alluvial deposits with isolated mountains and volcanoes. The river channel flows in a wide valley with a fertile but narrow (2-3 mile wide) floodplain that has been cultivated for centuries (Bartolino and Cole 2002).

Historically, the shape and pattern of the Rio Grande channel have continuously redefined the spatial distribution of sediments throughout the floodplain. However, in the twentieth and twenty-first centuries, floodway constriction and channel stabilization projects have altered the natural course of the river. For example, flow regulation by dams, levees, and jetty jacks have been used to control the location of the channel, preventing flow from reaching the historic floodplain and causing sediment to accumulate in some areas and scour in others (MEI 2003).

Sedimentology and fluvial geomorphology play an important role in describing the evolution of the Rio Grande and in influencing the spatial extent and species diversity of vegetation in riparian areas. The present-day channel is composed of clay, silt, sand, and gravel, similar to the composition of ancestral river deposits. In addition to the erosion and transportation of sediment through the main-stem channel, tributary streams can contribute large volumes of sediment to the system. The historic floodplain in other reaches, such as the Albuquerque Reach, has become disconnected from the river (MEI 2003).

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) classifies soils at the project site as part of the “Gila” series (Intera 2005a). Soils in this series are coarse loams with moderate infiltration.

Surface and subsurface soils near and around the project site in association with the Proposed Action were recently evaluated (Intera 2005a). A few soil samples taken in the survey contained elevated levels of lead and arsenic, above NMED industrial and residential soil screening levels. However, these samples were taken outside the footprint of proposed Sanctuary. During drilling boring logs indicated that sands are the predominant geologic material encountered to depths of 10 feet below surface or greater (Intera 2005b). Occasional layers of clay or silt material are also present, generally less than five feet below surface.

### **3.2.2 Hydrology and Hydraulics**

The MRG is the portion of the Rio Grande from the Colorado/New Mexico state line southward to the headwaters of Elephant Butte Reservoir, and includes the Rio Chama watershed. Most of the annual flow and discharge of the Rio Grande that reaches the MRG is generated in the headwaters of the river basin in Colorado and in the Rio Chama in northern New Mexico.

Most of the discharge volume of the Rio Grande is late spring snowmelt. Late summer monsoon events produce runoff and briefly alter the hydrograph of the river. These summer flows typically carry high sediment loads; however, the operations of Cochiti Dam since 1973 have greatly reduced the total supply of sediment throughout the Albuquerque Reach (SSPA 2004). Human activities have produced significant changes in the hydrology of the Rio Grande during the past century. The operation of upstream dams (Heron, El Vado, and Abiquiu Reservoirs on the Rio Chama, Jemez Dam on the Jemez River, and Cochiti Dam on the Rio Grande) affects flows in the river by storing and releasing water in a manner that generally decreases the spring flood peaks and alters the timing of the annual hydrograph.

Average daily flow for the Albuquerque gage (USGS gage 08330000), located upstream of the project site near the Central Bridge, was 1,206 cfs from 1942 to 2002 (USGS 2005).

The MRGCD operates the Drain. During the irrigation season (March through October) the Drain conveys water that is diverted from the Rio Grande approximately 25 river miles upstream of the project site at Angostura. During the irrigation season (March – October) some flow is diverted from the Drain to the Barr Main Canal. During the non-irrigation season (November – February), flow in the Drain comes from groundwater seepage, none is diverted to the Barr Canal.

Table 3-1 presents monthly flows (based on water years 2001-2003) in the Drain, as measured at the Tingley Beach gage, approximately one mile upstream of the Barr Main Canal Heading. Data presented in the table may be conservative because groundwater seepage likely contributes additional flow before reaching the diversion.

Table 3-1. Monthly Flow Data (2001-2003) from Tingley Beach Gage, Approximately One Mile Upstream from Barr Main Canal Heading.

Flow (cfs)	Month											
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Mean	29.4	21.0	76.0	114.9	113.9	107.0	127.5	140.7	119.1	112.3	42.5	25.8
High	36.0	59.0	168.0	162.0	164.0	146.0	194.0	233.0	166.0	161.0	76.0	38.0
Low	19.0	16.0	15.0	68.0	64.0	73.0	65.0	72.0	33.0	61.0	13.0	9.0

Source: D. Gensler, MRGCD hydrologist, pers. comm., 5/5/05

### 3.2.3 Floodplains

The floodplain of the Rio Grande, in the vicinity of the proposed Sanctuary, extends from the riverbank to the levee. All project components are proposed to be sited within the floodplain with the exception of the storage building, the intake pipeline, and the intake and outfall structures along the Drain.

Cochiti Dam has extensive flood control capacity and is designed to reduce flooding in the Albuquerque reach of the Rio Grande by maintaining peak outflows of 10,000 cfs or less (Bullard 2000b). According to USGS stream gage data from December 1, 1974 until September 30, 2002, 453 days were recorded with flows at or exceeding 5,000 cfs. While this is less than 5% of the recorded occurrences, it indicates a repeated event in the last 28 years. Reclamation Technical Service Center reports that five year peak flows in this reach range from 4,631 to 4,942 cfs; ten year peak flows are at or near 10,000 cfs (Bullard 2000a).

### 3.2.4 Water Resources and Net Depletions

The Rio Grande Compact, in effect, limits the amount of surface water that can be depleted (consumed) in the MRG based upon the natural flow of the river measured at the Otowi gage near Los Alamos (Rio Grande Compact 1939). In addition, the New Mexico State Engineer has determined the MRG is fully appropriated. Therefore, any increase in water use in one sector of use must be offset by a reduction in use in another sector such that senior water rights or New Mexico's ability to meet its downstream delivery obligations are not impaired. Therefore, the New Mexico State Water Plan (Office of the State Engineer/Interstate Stream Commission 2003) requires that new projects not result in increases in net water depletions, or that any increases are offset by purchased or leased water rights.

As described in Chapter 2, the Proposed Action will use an existing water supply, the Albuquerque Riverside Drain, which is operated by the MRGCD. Sanctuary water will be returned to the Drain and to the Rio Grande, which, combined with some groundwater seepage, is ultimately the source of drainflow. The use of the Drain water is non-consumptive in nature.

### 3.2.5 Erosion Control and Water Quality

Water quality standards exist for reaches and sub-reaches throughout the State of New Mexico including the Albuquerque reach. The water quality standards listed below are from the New

Mexico Water Quality Control Commission as amended through October 11, 2002, and are for the Albuquerque Reach between Sandia and Isleta Pueblos, within which the project site is located.

New Mexico Water Quality Standards (20.6.4.105):

- A. Designated Uses: irrigation, limited warm water fishery, livestock watering, wildlife habitat, and secondary contact.
- B. Standards:
  - 1. In any single sample: pH shall be within the range of 6.6 to 9.0, and temperature shall not exceed 32.2°C (90°F). The use-specific numeric standards set forth in 20.6.4.900 New Mexico Administrative Code (NMAC) are applicable to the designated uses listed above in Subsection A of this section.
  - 2. The monthly geometric mean of fecal coliform bacteria shall not exceed 1,000/100 mL; no single sample shall exceed 2,000/100 mL (see Subsection B of 20.6.4.13 NMAC)
  - 3. At mean monthly flows above 100 cfs, the mean monthly average concentration for: TDS shall not exceed 1,500 mg/L, sulfate shall not exceed 500 mg/L, and chloride shall not exceed 250 mg/L
  - 4. Narrative standards are those set forth in section 20.6.4.12 of the State of New Mexico Standards for Interstate and Intrastate Surface Waters. These include, but are not limited to:
    - i. Bottom Deposits – Surface waters of the State shall be free of water contaminants from other than natural causes that will settle and damage or impair the normal growth, function, or reproduction of aquatic life or significantly alter the physical or chemical properties of the bottom.
    - ii. Plant Nutrients – Plant nutrients from other than natural causes shall not be present in concentrations which will produce undesirable aquatic life or result in a dominance of nuisance species in surface waters of the state.
    - iii. Turbidity – Turbidity attributable to other than natural causes shall not reduce light transmission to the point that the normal growth, function, or reproduction of aquatic life is impaired or that will cause substantial visible contrast with the natural appearance of the water.

To obtain baseline information relevant to the Proposed Action, water quality sampling for a variety of parameters was conducted in spring 2005 (Intera 2005b). Surface water samples were taken at two locations in the Drain (at the proposed diversion and below the Sanctuary site) and at one location within the Rio Grande, near the mid-point of the proposed Sanctuary (Intera 2005b). Results are shown in Table 3-2. The table also presents some existing water quality data provided by Reclamation (2005) and the USFWS (2004) for both the Drain and the Rio Grande in the vicinity of the proposed Sanctuary.

Table 3-2. Results of Surface Water Quality Testing for Several Parameters from Locations Near the Proposed Site

Location	DO (mg/L)	pH	TSS (mg/L) Total Suspended Solids	TDS (mg/L) Total Dissolved Solids	Conductivity (µmhos/cm)	Temp. °C (°F)	Turb. (NTU)
Drain at Diversion <sup>1</sup>	9.0	8.15	27	260	410	NA	NA
Drain Below Sanctuary <sup>1</sup>	8.0	8.07	23	260	410	NA	NA
River at Mid-Sanctuary <sup>1</sup>	7.0	8.04	400	260	410	NA	NA
Drain (unknown location) <sup>2</sup>	6.8	7.49	NA	NA	255	13.7 (56.6)	NA
River at Barelas (August) <sup>3</sup>	6.4	8.2	NA	NA	350	24.9 (76.8)	359
River at Barelas (January) <sup>4</sup>	10.2	8.3	NA	NA	274	5.4 (41.7)	334

<sup>1</sup> Intera 2005, sampled on March 30, 2005

<sup>2</sup> M. Porter, Reclamation, pers. comm., 4/21/05. Averages from five dates from 2/8/05-3/27/05

<sup>3</sup> USFWS 2004. Collected at Barelas (USFWS 2004) August 22-23, 2002

<sup>4</sup> USFWS 2004. Collected at Barelas (USFWS 2004) in January 17-19, 2003

Water quality sampling indicates that existing conditions within sampled locations comply with New Mexico water quality standards. No metal concentrations, volatile organic compounds, chlorinated herbicides, pesticides, polychlorinated biphenyls, TPH, PAH, anions or other surface water parameters at tested locations exceeded New Mexico water standards. Similarly, groundwater studies conducted at the project site by Intera did not reveal the presence of any contaminants (Intera 2005a, b).

### 3.2.6 Air Quality and Noise

The proposed project is located in New Mexico's Air Quality Control Region No.152, which encompasses all of Bernalillo County. The county is "in attainment" (i.e.: does not exceed State and Federal Environmental Protection Agency air quality standards) for all criteria pollutants (NMED 1997). Air quality in the project area is generally good.

Albuquerque's noise control ordinance was placed into effect in June 1975. The Environmental Health Department's Consumer Protection Division personnel are responsible for enforcing the ordinance. The ordinance stipulates a property-line value in which the noise level emitted must not exceed 50 decibels (dB) or 10 dB above the ambient level; whichever is greater (Mitzelfelt 1996). For example, if operating a stereo, the sound level traveling from the stereo to the neighboring property lines cannot be more than 10 dB higher than the general noise level existing before the stereo was turned on.

Ambient noise in the vicinity of the proposed Sanctuary site is relatively minimal due to the undeveloped nature of the site.

### 3.2.7 Vegetation Communities

The riverbank community along the MRG consists of open sand bars along the main channel. These areas are subject to frequent disturbance from erosion and flood events and typically have little or no vegetation. Sparse growth of young cottonwood (*Populus deltoides*), coyote willow (*Salix exigua*), tamarisk (*Tamarix* sp.), and a variety of annual forbs is occasionally found. An increase in non-native vegetation has been identified as the most significant indicator of failing ecological health in the riparian ecosystem. Species such as tamarisk, Russian olive (*Elaeagnus angustifolia*), and Siberian elm (*Ulmus pumila*) have more extensive reproductive cycles than native species, allowing them to out-compete native trees in many locations. The facts that flood peaks have been reduced and the river has incised through the Albuquerque Reach also contribute to the transformation of riparian forests, since the non-native species are more tolerant of reduced floods and lower water tables.

The project site has recently been mechanically cleared of underbrush, although non-native weedy species have colonized cleared areas in most locations. Remaining vegetation is composed of a mid-successional riparian forest with a nearly closed canopy comprised predominantly of Rio Grande cottonwood trees and saplings. Limited riparian cover is present along the nearly vertical banks of the Drain, which are dominated by invasive weeds. Siberian elm, saltcedar, and numerous weedy herbaceous species including Western salsify (*Tragopogon dubius*), cheatgrass (*Bromus tectorum*), and mustard (*Sisymbrium* and *Descurainia* spp.) occupy the bosque floodplain. The site was cleared in 2004 by the USACE as part of the ongoing fuel reduction project. A number of cottonwoods have been pole planted in the project site with moderate success (Reclamation and USACE 2003). No wetlands are present in the vicinity of the Sanctuary or proposed infrastructure.

### 3.2.8 Noxious Weeds

The Federal Noxious Weed Act of 1974 (Public law 93-269; U.S.C. 2801) provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce. Executive Order (EO) 13112 directs Federal agencies to prevent the introduction of invasive (exotic) species and provides for their control and to minimize the economic, ecological, and human health impacts that invasive species cause.

The State of New Mexico, under administration of the United States Department of Agriculture, designates and lists certain weed species as being noxious (Nellessen 2000). “Noxious” in this context means plants not native to New Mexico that may have a negative impact on the economy or environment, and are targeted for management or control. Class A weeds have limited distributions within the state. Preventing new infestations and eliminating existing infestations is the priority for Class A weeds. Class B weeds are considered common within certain regions of the state but are not widespread. Control objectives for Class B weeds are to prevent new infestations, and in areas where they are already abundant, to contain the infestation and prevent their further spread. Class C listed weeds are common, widespread species that are fairly well established within the state.

At the site, several young saltcedar and Russian olive trees have become established in areas containing open canopy. Additionally, scattered Siberian elm occur on the site, and are the predominant tree species that line the Drain and Canal conveyances east of the project site. All

three plant species are considered Class C weeds. Management and suppression of Class C weeds is at the discretion of the lead agency.

### 3.2.9 Fish and Wildlife

Changes in the river elevation relative to the floodplain and the hydrologic and sediment regime as well as the introduction of predatory species (game fish) have affected the fauna of the Rio Grande. Historically, the riparian corridor of the MRG supported a wide diversity of terrestrial species. Prior to increased anthropogenic control, the river system periodically contributed water and nutrients to the floodplain and supported a number of aquatic species that no longer inhabit the area.

Common fish species of the MRG include river carpsucker (*Carpiodes carpio*), flathead chub (*Platygobio gracilis*), common carp (*Cyprinus carpio*), western mosquitofish (*Gambusia affinis*), and red shiner (*Cyprinella lutrensis*) (Platania and Bestgen 1988). Less common fish species present in the system are channel catfish (*Ictalurus punctatus*), fathead minnow (*Pimephales promelas*), longnose dace (*Rhinichthys cataractae*), white sucker (*Catostomus commersoni*), and the RGSM. Western mosquitofish, white sucker, and common carp are introduced species that are now common throughout the MRG.

In the most intensive biological survey of the MRG to date, Hink and Ohmart (1984) found 18 different species of reptiles and amphibians in the MRG. Eastern fence lizard (*Sceloporus undulatus*), New Mexican whiptail (*Aspidoscelis neomexicanus*), and Woodhouse toad (*Bufo woodhousii*) were common and widespread. Several common species in the MRG, such as bullfrogs (*Rana catesbeiana*), leopard frogs (*Rana pipiens*), and Woodhouse toads, are ubiquitous throughout the state. Others like the chorus frog (*Pseudacris triseriata*) and the common gartersnake (*Thamnophis sirtalis*), are unique to the MRG (Hink and Ohmart 1984).

Throughout the year, riparian communities of the MRG provide important habitat during breeding and migration for many bird species. Hink and Ohmart (1984) recorded 277 species of birds within 163 miles of MRG bosque habitat. Stahlecker and Cox (1997) documented 126 species in the Rio Grande Nature Center State Park. They estimate that 60–65 species of birds breed most years in the park (Stahlecker and Cox 1997). The 10 most common species in the bosque during the summer of 1997 were black-chinned hummingbird (*Archilochus alexandri*), red-winged blackbird, black-headed grosbeak (*Pheucticus melanocephalus*), spotted towhee (*Pipilo maculatus*), brown-headed cowbird (*Molothrus ater*), mourning dove (*Zenaida macroura*), Bewick's wren (*Thryomanes bewickii*), black-capped chickadee (*Poecile atricapillus*), cliff swallow (*Petrochelidon pyrrhonota*), house finch, and European starling (Stahlecker and Cox 1997). At the Albuquerque Overbank Project near the proposed project 46 species of birds were noted during the summer of 2000 through spring 2001 (Ellis 2001).

The Rio Grande is a major migratory corridor for songbirds (Yong and Finch 2002), waterfowl, and shorebirds. At various times of the year, riparian areas of the MRG support the high bird densities and species diversity. Both the river channel and the drains adjacent to the bosque provide habitat for species such as mallards, wood ducks, great blue herons, snowy egrets, green herons, belted kingfishers and black phoebes.

An active great horned owl nest is present near the northern boundary of the site, just south of the Glass Gardens (M. Schmader, pers. comm., 4/20/05). The nest tree and a 100 meter buffer were flagged during the spring to notify geotechnical and survey crews to avoid the area.

The peak nesting season for birds is April through August. The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) is the primary legislation in the United States established to conserve migratory birds. The list of the species protected by the MBTA appears in title 50, section 10.13, of the Code of Federal Regulations (50 CFR 10.13), and includes several species that may occur on the site including the bald eagle (*Haliaeetus leucocephalus*). The MBTA prohibits taking, killing, or possessing of migratory birds unless permitted by the Secretary of the Interior. The USFWS and the Department of Justice are the Federal agencies responsible for administering and enforcing the statute.

Hink and Ohmart (1984) recorded 35 mammal species in their study of the MRG, and Campbell et al. (1997) observed 14 mammal species in their survey of the Albuquerque Reach. Based on both surveys, the most common small mammals in the proposed project area include white-footed mouse (*Peromyscus leucopus*), western harvest mouse (*Reithrodontomys megalotis*), and house mouse (*Mus musculus*) (Hink and Ohmart 1984; Campbell et al. 1997). Large mammals in the area include coyotes, raccoons, beavers, muskrats, pocket gophers, and rock squirrels. Several species of bats also utilize the MRG.

### **3.2.10 Threatened, Endangered and Special Status Species**

The agencies that have primary responsibility for the conservation of plant and animal species in New Mexico are the USFWS, under authority of the ESA; the NMDGF, under authority of the New Mexico Wildlife Conservation Act of 1974; and the New Mexico Energy, Minerals and Natural Resources Department, under authority of the New Mexico Endangered Plant Species Act. These agencies maintain lists of plant and animal species that have been classified, or are potential candidates for classification, as Threatened or Endangered in Bernalillo County (Appendix B). Of those species known to occur in the County, 13 are likely to occur in the project area as shown in Table 3-3.

Protection from harassment, harm, or destruction of habitat is granted to species protected under the ESA. The New Mexico Wildlife Conservation Act and New Mexico Endangered Plant Species Act protect state-listed species by prohibiting taking without proper permits.



Table 3-3. Threatened (T), Endangered (E), State Sensitive or Federal Species of Concern (S), Candidate (C), and Proposed (P) Plant and Wildlife Species Known to Occur in Bernalillo County, New Mexico with Potential to Occur in the Project Area.

Common Name	Scientific Name	Federal	State	General Habitat
<i>Fish</i>				
Rio Grande Silvery Minnow	<i>Hybognathus amarus</i>	E <sup>1</sup>	E	Silt and sand substrates in slow backwaters; Chihuahuan desert scrub, plains-mesa grassland
<i>Birds</i>				
Neotropic Cormorant	<i>Phalacrocorax brasilianus</i>		T	Rivers, lakes and reservoirs with adjacent wooded sites; desert grassland, Rocky Mountain upper and lower montane coniferous forest
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	T	Winters along shores of rivers and lakes; Chihuahuan desert scrub, Rocky Mountain upper and lower montane coniferous forest
Common Black-Hawk	<i>Buteogallus anthracinus anthracinus</i>		T	Woodlands along lowland streams
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	S	T	Chihuahuan desert scrub, Rocky Mountain upper and lower montane coniferous forest; Montane species, prefers to perch in open areas often near water
Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	C	S	Forest canopy desert grassland, Rocky Mountain upper and lower montane coniferous forest; dense riparian shrub
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E <sup>1</sup>	E	Rocky Mountain upper and lower montane coniferous forest; dense riparian groves of willow or saltcedar
Loggerhead Shrike	<i>Lanius ludovicianus</i>		S	Chihuahuan desert scrub, plains-mesa grassland; riparian areas and woodlands of piñon-juniper
Bell's Vireo	<i>Vireo bellii</i>		T	Chihuahuan desert scrub, piñon juniper woodland; riparian
<i>Mammals</i>				
Yuma Myotis Bat	<i>Myotis yumanensis yumanensis</i>		S	Scrub shrub, desert grassland, Rocky Mountain upper and lower montane coniferous forest; riparian and aquatic habitats for feeding
Occult Little Brown Myotis Bat	<i>Myotis lucifugus occultus</i>		S	Chihuahuan desert scrub, subalpine coniferous forest; riparian and aquatic habitats for feeding
Red Fox	<i>Vulpes vulpes</i>		S	Piñon juniper woodland, alpine tundra
Western Spotted Skunk	<i>Spilogale gracilis</i>		S	Mixed woodlands and open areas, scrub, and farmland
<i>Plants – None in project area</i>				

E = Endangered, T = Threatened, P = Proposed, C = Candidate; S = Sensitive or Species of Concern

<sup>1</sup>Federal critical habitat has been designated or proposed for this species; <sup>2</sup>Non-essential experimental population;

Sources: Information received via email from L. Pierce, BISON-M Coordinator, NMDGF, 4/15/05; NMDGF 2004a; Plant data: New Mexico Rare Plant Technical Council (2005)

<http://nmrareplants.unm.edu/nmrptc/county.htm#Section1>

The general vegetation type that each species is known from is listed in Table 3-3 in the “General Habitat” column. Four of the 13 species with the potential to occur in the project area are listed or candidates for listing under the Federal ESA: Rio Grande silvery minnow (endangered); bald eagle (threatened); yellow-billed cuckoo (candidate); and southwestern willow flycatcher (endangered).

Of the remaining ten species, four are state-listed (all threatened): neotropic cormorant, common black-hawk, American peregrine falcon, and Bell’s vireo. The last five species are Federal or state species of concern: loggerhead shrike, Yuma myotis bat, Occult little brown myotis bat, red fox and western spotted skunk. A discussion of each of these species and the potential effects from the Proposed Action is presented below. No sensitive plants have potential to occur on site.

### ***Fish***

Rio Grande Silvery Minnow (*Hybognathus amarus*). In 1994, the RGSM was classified as endangered by the USFWS (FR 1994a) and has been considered endangered at the state level since 1979. Historically, the RGSM was one of the most widespread and abundant fishes in New Mexico. The species has declined as a result of impacts from dewatering, habitat degradation from dams after dewatering, channelization and flow regulation for irrigation, diminished water quality, and competition/predation by non-native species. The species is endemic to New Mexico, where it historically occupied large rivers with shifting sand substrates. The RGSM currently occupies less than 10 percent of its historic range and is found only in the Rio Grande from Cochiti Reservoir downstream to Elephant Butte Reservoir (Propst 1999).

Natural habitat for the RGSM includes stream margins, side channels, and off-channel pools where water velocities are lower than in the main channel. Areas with detritus and algal-covered substrates are preferred. The lee sides of islands and debris piles often serve as good habitat. Stream reaches dominated by straight, narrow, or incised channels with rapid flows would not typically be occupied by the RGSM (Sublette et al. 1990; Bestgen and Platania 1991). Critical habitat for the RGSM was designated by the USFWS from the Highway 22 Bridge downstream to the headwaters of Elephant Butte Reservoir, including the Albuquerque Reach (FR 1999). This designation became effective February 19, 2003 (USFWS 2003b).

Constituent elements of critical habitat required to sustain the RGSM include, in summary: (1) A hydrologic regime that provides flowing water to maintain a diversity of aquatic habitats, including backwaters, shallow side channels, pools, eddies, and runs for each life-history stage in appropriate seasons; (2) The presence of low-velocity habitat (including eddies created by debris piles, pools, or backwaters, or other refuge habitat); (3) Substrates of sand or silt; and, (4) Water of sufficient quality to maintain water temperatures in the approximate range of greater than 1 °C (35 °F) and less than 30 °C (85 °F) and reduce degraded water quality conditions essential for the survival and reproduction of RGSM (USFWS 2003b).

RGSM populations within the Albuquerque Reach of the MRG, within which the project site is located, have been monitored on an ongoing basis by the University of New Mexico and the USFWS. Generally, the data collected indicate that RGSM are rare throughout the reach, with many of the individuals collected being adults (Platania and Dudley 2004). Data collected through December 2003 indicate a near-absence of Age-0 RGSM in the MRG, suggesting that

the population has dramatically decreased in recent years (USFWS 2003b). These data indicate that the population may benefit by retaining eggs, larvae, and juveniles in upstream areas like the Albuquerque Reach, where they can contribute to the population growth and aid in the recovery of the species.

Dr. Michael Porter, Reclamation Fishery Biologist, stated that recent electroshocking surveys were completed in the Albuquerque reach of the MRG in which the project site is located. These surveys have documented RGSM occurrence in the vicinity of the project site, however, numbers are low. New Mexico State University researcher Dr. David Cowley has sampled the Drain and found that RGSM are present in low numbers in the vicinity of the Barr Main Canal Heading (pers. comm., 6/1/05). Six RGSM were observed during surveys conducted in November 2004 in the Albuquerque Riverside Drain, South of Avenida de Cesar Chavez, which is several hundred feet north of the project site (Cowley 2004). RGSM may enter the Drain upstream of the project site via the unscreened irrigation diversion at Angostura Dam; however, because there are very few RGSM above the dam, most fish present in the Drain likely enter through unscreened irrigation outfalls throughout the system (M. Porter, pers. comm., 4/21/05).

### ***Birds***

Bald Eagle. This species is currently listed as threatened by both the USFWS and the State of New Mexico. Bald eagles are associated with habitats near open water and commonly winter adjacent to rivers and lakes, or where carrion is available. The major food items of bald eagles in New Mexico are waterfowl, fish, and carrion (NMDGF 2004b). Bald eagles are uncommon during the summer and have limited breeding sites in New Mexico, though nests have been documented in the extreme northern and western portions of the state. The number of birds wintering in the state has been steadily increasing. Important wintering areas include the upper Rio Grande, but seldom the MRG (NMDGF 2004b).

Bald eagles frequent all major river systems in New Mexico from November through March, including the Rio Chama and Rio Grande. Potential roost sites in the project vicinity are large cottonwoods located along the banks of the Rio Grande. According to Dr. Rob Doster (Reclamation Wildlife Biologist, 3/28/05), bald eagles are incidentally present in the vicinity of the proposed project, and may occasionally use trees in the vicinity during winter roosting.

Southwestern Willow Flycatcher. The southwestern willow flycatcher is considered endangered by both the USFWS and the State of New Mexico. The subspecies is restricted to dense riparian vegetation along select waterways in New Mexico. The decline of the species has been attributed to loss of riparian habitat, brood parasitism, and lack of adequate protective regulations.

The flycatcher is an obligate riparian species and nests in thickets associated with streams and other wetlands where dense growth of willow, Russian olive, saltcedar, or other shrubs are present. Dense riparian woodlands are particularly important as breeding habitat. In New Mexico, the flycatcher occupies riparian habitat along the Rio Grande, Rio Chama, Zuni River, San Francisco River, and Gila River drainages and is generally found within 150 feet of a water source. Nests are frequently associated with an overstory of scattered cottonwood.

Dr. Jennifer Parody and Ms. Nancy Baczek of the USFWS (Albuquerque office) visited the proposed project site and surrounding area with Mr. Rick Billings (HDR/FishPro) on April 7, 2005. The purpose of the site visit was to determine if the site contained potential habitat. Service personnel walked the entire site and adjacent areas and determined that there is no actual or potential suitable habitat for the species within ¼ mile of the site in any direction. Although USFWS personnel did indicate that the area could potentially be used as a migratory corridor for the species, no further surveys or construction restrictions were indicated to be necessary in association with the Proposed Action (R. Billings, pers. comm., 4/11/05). In New Mexico, as part of the MBTA, construction timing restrictions (April 15 – August 15) are generally imposed at sites known to contain habitat.

Yellow-billed Cuckoo. The yellow-billed cuckoo is a USFWS candidate species that occurs locally along riparian corridors throughout New Mexico. Ideal habitat appears to be dominated by cottonwood canopy with a well-developed willow understory. In New Mexico, historical accounts indicate that the cuckoo was locally very common along the Rio Grande, but rare statewide (NMDGF 2004). Both Hink and Ohmart (1984) and Stahlecker and Cox (1997) reported yellow-billed cuckoo as a nesting bird in the bosque of the MRG. Limited habitat for this species is available along the riparian corridor of the Rio Grande in the vicinity of the project site.

Neotropic Cormorant. The neotropic cormorant is listed as threatened by the State of New Mexico and is a rare to uncommon non-breeder to the middle and lower Rio Grande valley (Hubbard 1978). Though this cormorant is considered rare in Bernalillo County (NMDFG 2005a), the species has been recently observed in the county in the vicinity of the project area (R. Doster, Reclamation Wildlife Biologist, pers. comm., 5/11/05). In New Mexico, cormorants are generally found on larger bodies of water such as reservoirs, where they prey on fish (Hubbard 1978). They nest near or over water, in vegetation such as dead snags or trees. Nesting neotropic cormorants require stands of trees or shrubs in or near water and that are free from human disturbance (NMDGF 2005a). This species may occur in the project area, as evidenced by recent observations, but is unlikely to breed there due to lack of suitable lacustrine habitat and a relatively high degree of human disturbance.

Common Black-Hawk. The common black-hawk is listed as threatened by the State of New Mexico and may occur in the Albuquerque Reach (NMDGF 2004c). Though the common black-hawk is considered rare in Bernalillo County, nesting was observed in the Isleta Reach during the summer of 2003 (Williams 2003) and the species has been reported as breeding along the Rio Grande north to Albuquerque (Hundertmark 1974). The common black hawk primarily occupies riparian woodlands, particularly areas with well-developed cottonwood, or a variety of woodland and marsh habitats along permanent lowland streams. Breeding black-hawks require mature riparian forest stands near permanent water. A common black-hawk nest was recently observed just south of the proposed project area (R. Doster, Reclamation, pers. comm., 5/11/05). However, the degraded quality of existing riparian vegetation likely limits use of the immediate project site by this species.

American Peregrine Falcon. The American peregrine falcon is considered a sensitive species by the USFWS and is listed as threatened by the State of New Mexico. It is considered an

occasional winter migrant, occurring rarely as a transient in spring and fall in Bernalillo County (NMDFG 2005b). Peregrine falcons are summer residents or year-round residents in montane areas almost statewide in New Mexico, and are considered rare to uncommon and local (Hubbard 1978). In New Mexico, the breeding territories of peregrine falcons center on cliffs that are in wooded/forested habitats, with large "gulfs" of air nearby in which these predators can forage (Hubbard 1985). Dr. Rob Doster recently observed a peregrine, most likely a migrant, soaring over the Rio Grande in the vicinity of the proposed project site (pers. comm., 5/11/05). No nesting habitat occurs in the immediate project area, although marginal foraging habitat may be available.

Bell's Vireo. Bell's vireo is listed as threatened by the State of New Mexico and occurs rarely in Bernalillo County. The species summers locally in the lower and MRG and is a vagrant north to Albuquerque (NMDFG 2005d). In New Mexico this species characteristically occurs in dense shrubland or woodland along lowland stream courses, with willows, mesquite, and seepwillows associated most often with riparian habitat of the species (Hubbard 1985). In the immediate project site, the riparian habitat is relatively degraded; however, the species has a low probability of occurrence in the riparian corridor along the Rio Grande in the vicinity of the Proposed Action, although breeding is unlikely.

Loggerhead Shrike. The loggerhead shrike is considered a sensitive species by the State of New Mexico and is a rare summer breeder in Bernalillo County (NMDFG 2005c). Loggerhead shrikes are also uncommon transients within Bernalillo County during the spring, fall and winter. Loggerhead shrikes are usually seen in relatively xeric habitats dominated by shrubs and desert saltgrass and also inhabit open area, including shrubland and shrubby grasslands at lower (2800-5500 feet) to middle (5000-7500 feet) elevations. Open country interspersed with improved pastures, grasslands, and hayfields is primary shrike habitat throughout its range (NMDFG 2005c). The species is a casual visitor to riparian areas with sufficient permanent hydrologic regimes to allow for the establishment of emergent plants and deciduous trees and shrubs. Although the shrike may be an occasional user of the riparian fringe along the Rio Grande in the vicinity of the project site, primary habitat for the species does not occur in the area.

### ***Mammals***

Yuma Myotis. The Yuma myotis is considered a sensitive species by the State of New Mexico and has been collected along the Rio Grande (Findley et al. 1975). The species is typically found in grassland, woodland and riparian habitats from 4,000 to 7,000 feet in elevation. This species is most common in desert areas and is closely associated with foraging habitats of open water (Schmidly 1991). Yuma myotis forages at the water surface. Railroad bridges and buildings are common summer retreats for this bat (Findley et al. 1975). Young are raised in nursery colonies located in buildings, mine tunnels, and under bridges (Schmidly 1991). These nursery roosts are highly sensitive and are quickly abandoned if disturbed. Foraging Yuma myotis may occur in the project area associated with both the Rio Grande and the Drain.

Occult Little Brown Bat. The occult little brown bat is considered a sensitive species by the State of New Mexico and, like the Yuma myotis, is closely associated with foraging habitats consisting of large permanent water sources such as streams, drainage ditches, or lakes (Findley et al. 1975). Areas where such bodies of water are lacking support these animals only as

transients. Vegetation zone seems unimportant in determining their distribution (Findley et al. 1975), although nursery colonies of up to several hundred individuals frequently roost under exfoliating bark of old growth ponderosa pine snags. This species is insectivorous, foraging at the water surface. As with Yuma myotis, occult little brown bat may occur in the project area associated with open water habitat.

Red Fox. The red fox is considered a sensitive species by the State of New Mexico and occurs year round in Bernalillo County (NMDFG 2005e). In New Mexico, the status and threats to the red fox are so poorly known that little can be said as to their need for special protection (Frey and Yates 1996). Thompson et al. (1992) found that the red fox uses urban and agricultural habitat, with common usage of subalpine coniferous forest and mixed woodlands with good development of ground cover. Red foxes do well on the margins of urbanized areas and are common in open space and other undeveloped areas adjacent to urban sites (NMDGF 2004). Because red fox are highly mobile and can occur in many different types of habitat, the species is probable to occur at times within the project area.

Western Spotted Skunk. The western spotted skunk is considered a sensitive species by the State of New Mexico and likely occurs year round in Bernalillo County. Western spotted skunks are found in shortgrass plains, cottonwood/willow riparian areas, rabbitbrush, oak savanna and woodland, pinon-juniper, chaparral, and coniferous forest. Spotted skunks are known to prefer the scrub-shrub areas of the riparian bosque and are known to be abundant in agricultural areas and around human constructions (NMDFG 2005f). Due to the presence of scrub shrub plant associations along the riparian corridor of the Rio Grande, the western spotted skunk may occur in the vicinity of the proposed project.

### **3.2.11 Cultural Resources**

Cultural resources include archaeological sites, sites eligible for the State Register of Cultural Properties and/or the National Register of Historic Places (NRHP), and properties of traditional religious or cultural importance (Traditional Cultural Properties [TCPs]).

The indigenous population in the Rio Grande Valley of New Mexico dates back at least 12,000 years (Cordell 1997). The steady influx of people of European descent into the Rio Grande Valley of present-day New Mexico from the sixteenth century onward has given rise to a diverse cultural mosaic and has left a multitude of varied cultural resources that are more than 50 years old. The state was part of the Spanish Colonial Empire until Mexico won its independence in 1821. Twenty-five years later, in 1846, New Mexico was claimed by the United States. These successive cultures have left archaeological sites (habitation, mining, industrial, and other), standing structures, bridges, utilities, and a network of irrigation canals more than 50 years old (Arrowsmith 1963; Cordell 1997; Rivera 1998; Van Citters 2003).

Archaeological resources in the Albuquerque Reach of the Rio Grande floodplain are limited because of poor preservation, the result of a long history of agricultural use of the valley floor, and development of the metropolitan area (for the most part on private lands) prior to the existence of a preservation ethic. Historical records emphasize protohistoric and historic settlement in the North Valley between Albuquerque and Bernalillo (Sargeant 1985; Campbell

2001), and archaeological work on the West Mesa has contributed a great deal to our understanding of regional prehistory (Schmader 1991, 1994).

No TCPs or sacred sites have been identified. Since the project is located in the original meandering path of the Rio Grande, any Tribal artifacts that might have once existed there have a very low probability of still being present.

In 1999, SWCA, Inc. Environmental Consultants recorded a historic urban trash dump at the “Glass Gardens” located just north of the proposed project site (SWCA 1999). Although numerous glass and crockery items occur on the site, it has not yet been determined if the site is listed on the National Register for Historic Places, or eligible for listing under the NHPA of 1974 (16 U.S.C. 470).

To determine if any sites known to be listed on or eligible for the NRHP are within the project area, Reclamation conducted a records search for the proposed project in the Archaeological Records Management Section database of the New Mexico Historic Preservation Division. In addition, a Reclamation archaeologist conducted a surficial investigation of the site to determine the extent of cultural resources that may be present in the project footprint. The results of the site visit indicate that the areas proposed for disturbance due to construction of the Sanctuary and associated infrastructure contain scattered debris, primarily glass artifacts from the Glass Gardens, that have been deposited relatively recently (J. Hanson, Reclamation, pers. comm., 6/1/05). These deposits are not intact and do not represent culturally or historically significant resources. However, approximately 20 wooden bollards, which are part of old river control works, occur along eastern edge of Sanctuary site that would likely be considered historically significant (J. Hanson, Reclamation, pers. comm., 6/1/05).

### **3.2.12 Indian Trust Assets**

ITAs are legal interest in assets held in trust by the United States Government for Indian tribes or for Indian individuals. Some examples of ITAs are lands, minerals, water rights, hunting and fishing rights, titles and money. ITAs cannot be sold, leased, or alienated without the express approval of the United States government. The United States has a trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or individuals by treaties, statutes, EOs, and rights further interpreted by the courts. This trust responsibility requires that all Federal agencies take all actions reasonably necessary to protect such trust assets.

### **3.2.13 Socioeconomic Considerations**

Socioeconomic resources include population and economic activity. Some related secondary components, such as housing availability and public services, are not considered in this analysis because the action has no potential to generate measurable changes in populations that will create demand for these resources. Statistics at the county level are used to describe the socioeconomic context.

The proposed project is in Bernalillo County, New Mexico. The population in Bernalillo County was estimated at 573,675 in 2002 (U.S. Census Bureau 2002). It is approximately 1,166 square

miles with 477 persons per square mile. It is generally urban in character. In 1999, Bernalillo County had a per capita personal income of \$20,790 (U.S. Census Bureau 2002).

### **3.2.14 Visual and Aesthetic Resources**

Visual and aesthetic resources generally include the presence or absence of man-made features, landforms, water surfaces, and vegetation relative to the surroundings and settings of an area. These features are the primary characteristics of an area or project that determine its visual character and the manner in which people view the setting. The bosque area is normally considered a sensitive area and viewshed. The existing visual character of the proposed action consists of two different settings.

The first is a complex of cottonwood trees, intermixed with openings and small stands of saltcedar, Russian olive, Siberian elm and other shrubs and trees. The riparian corridor the proposed action is located in is used for recreation and open space. The river itself is visible from the site in most vegetation and atmospheric conditions. Portions of the site have been subjected to illegal dumping of solid waste, some of which remains at the site. The visual characteristics of the site are not unique when compared to other, similar areas in the bosque.

The second is a complex of urban, recreational, commercial and light industrial area, with a mixture of different structural forms and open areas. The views change from one location to another. The levee serves as delineation physically, and visually, for the bosque, or wooded area. This complex borders the proposed site east of the levee and the drain.

### **3.2.15 Land Use and Recreational Resources**

The bosque area within Albuquerque is designated as the Rio Grande Valley State Park through the Park Act of 1983 and is cooperatively managed by the City of Albuquerque Open Space Division and the MRGCD. The proposed site for the Sanctuary is within these lands. Immediate neighboring land uses are commercial and industrial to the east of the Proposed Action, on the east side of the river, across the Drain, within approximately 300 feet of the Proposed Action. On the west side of the river, outside the bosque, residential areas occur. The nearest agricultural land use is south and east of the Proposed Action, within approximately 500 feet of the southern boundary.

There are park areas with athletic fields just south and east of the Drain. Pedestrians and bicyclists are frequently encountered using the paths on the levee adjacent to the project site, and on the paths east of the Drain.

### **3.2.16 Environmental Justice**

The planning and decision-making process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations, including EO 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations", which was issued by President Clinton on February 11, 1994. The essential purpose of EO 12898 is to ensure the fair treatment and meaningful involvement of all people



regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Environmental justice concerns also reflect consideration of EO 13045, “Protection of Children from Environmental Health Risks and Safety Risks”. This EO directs Federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children under the age of 18. These risks are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or ingest.”

Compared to demographics on the national level, the population of Bernalillo County has proportionately more persons of Hispanic and Native American background and fewer persons of African-American and Asian background. Ethnic comparisons in the State of New Mexico are proportionately similar to Bernalillo County. It should be recognized that persons of Hispanic background might also claim identification with another ethnic group.